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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/776,264	02/12/2004	Koji Nitta	70456-012	4866

7590 11/29/2005

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Washington, DC 20005-3096

EXAMINER
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VAN, LUAN V

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 11/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/776,264

Applicant(s)

NITTA ET AL.

Examiner

Luan V. Van

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 01 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/1/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5 and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by Neipert et al.

Regarding claim 1 and 8, Neipert et al. teach a molten salt bath, containing lithium bromide, cesium bromide, and a halide of an alkali metal and/or a halide of an alkaline earth metal (column 2 line 44). With respect to the limitation of using the bath for electroforming, the limitation is an intended use of the instant invention and, thus, is not given patentability weight.

Regarding claim 5, Neipert et al. teach a molten salt bath wherein the said molten salt bath for electroforming has a eutectic composition (column 2 lines 35-51).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Neipert et al.

Regarding claim 2, Neipert et al. teach a molten salt bath containing lithium bromide, cesium bromide, and a sodium iodide, which is a halide of an alkali metal (column 2 line 44). The difference between the reference to Neipert et al. and the instant claims is that the reference does not explicitly teach that the halide of the alkali metal is potassium bromide.

However, Neipert et al. teach a suitable molten salt bath comprises a mixture of potassium bromide and lithium bromide for depositing titanium (column 1 lines 45-50).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Neipert et al. by substituting the sodium iodide with potassium bromide as suggested by Neipert et al., because a skilled artisan would be able to select from among known alkali metal halides for precipitating a metal in a molten salt bath.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neipert et al. in view of Tokumoto.

Neipert et al. teach a molten salt bath containing lithium bromide, cesium bromide, and a halide of an alkali metal and/or a halide of an alkaline earth metal (column 2 line 44). The illustrative phase diagram in figure 2 of a lithium bromide and potassium bromide mixture indicates that the operating temperature of the bath can be determined by the appropriate selection of the mole fraction of the components. In addition, Neipert et al. teach a molten salt bath containing lithium in excess of the stoichiometric quantity required for the reaction (column 2 lines 6-10).

The difference between the reference to Neipert et al. and the instant claims is that the reference does not explicitly teach the specific mole fraction sum of lithium bromide and cesium bromide to the entire bath nor the specific mole ratio of lithium bromide to cesium bromide.

Tokumoto teach a method and a molten salt bath for electrodepositing titanium metal. In addition, Tokumoto teach that changing the proportion of a molten mixture would produce a metal having varying surface qualities (column 3 line 53 -- column 4 line 72; and examples 1-4). Although Tokumoto teach a molten mixture comprising of lithium bromide and potassium bromide with a combined molar ratio of 76.5 (example 1) to deposit a metal with smooth surfaces, a skilled artisan would have expected a molten mixture comprising of lithium bromide and cesium bromide having a similar molar ratio to have similar properties, since a lithium bromide and cesium bromide mixture is chemically similar to a lithium bromide and potassium bromide mixture.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Neipert et al. by using the mole fraction within the range of the instant claim as taught by Tokumoto, because it would deposit a metal with smooth surfaces. Similarly, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the mole ratio within the range of the instant claim through routine experimentation in order to deposit a metal with smooth surfaces.

Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Westfall in view of Uriu et al.

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Regarding claim 6, Westfall teach an electrolytic method of depositing metal, including palladium, chromium and titanium, using molten salts and eutectic mixtures (claim 1). In addition, Westfall teach that the method can be applied to depositing a conformal coating on custom-shape substrates, including custom-shaped mandrels (column 37).

The difference between the reference to Westfall and the instant claims is that the reference does not explicitly teach depositing a metal on a substrate having a resist pattern.

Uriu et al. teach a method of manufacturing a metal product, comprising the steps of: forming a resist pattern on a conductive substrate and exposing a portion of said conductive substrate (example 1); immersing said conductive substrate having said resist pattern formed into an electrolytic bath for electroforming; and precipitating a metal at a portion where said conductive substrate is exposed.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the method of Westfall by electrodepositing a metal on the substrate having a resist pattern as taught by Uriu et al., because electrodepositing a metal on the substrate having a resist pattern is well known in the art, and because it would selectively deposit a metal on the exposed area of a conductive substrate.

Regarding claim 7, Westfall teach that chloride, bromide and iodide salt mixtures are excellent candidates as low temperature molten salt baths (column 31 lines 6-15), and that numerous molten salt baths, having operating temperatures equal to or less than 300°C, can be used (column 30-31; mixtures 103 and up).

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure. George and Dugan teach similar electroforming processes using a resist pattern.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Luan V. Van whose telephone number is 571-272-8521. The examiner can normally be reached on M-F 8:30-5:00.

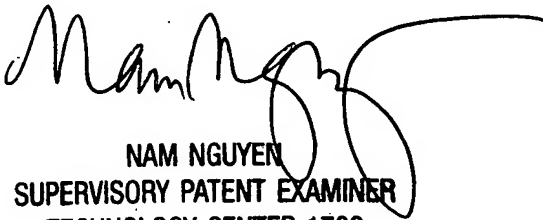
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LW  
11/16/05



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